1108-112 Attenuation of Ischemic Calcium Overload and Myocardial Stunning by Calmodulin Antagonist W7 in the Isolated Mouse Heart

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Background: Activation of a calcium-calmodulin complex may play an important role in ischemia/reperfusion-induced myocardial injury. We determined the effects of the calmodulin antagonist W7 on the relationship between intracellular calcium (Ca_i^{2+}) and left ventricular (LV) function during ischemia and reperfusion on a beat-to-beat basis in the isovolumic coronary-perfused mouse heart, a model we recently developed.

Method: 23 hearts, perfused at 3 ml/min and 30°C, paced at 6 Hz and loaded with aequorin, were made globally ischemic for 15 min and reperfused for 20 min. In 13 hearts perfusate contained 10 μM W7.

Results: Global ischemia caused a rapid decline in LV function, followed by ischemic contracture and a rise in Ca_i^{2+}. Reperfusion was characterized by an initial burst of Ca_i^{2+} and a gradual decline to normal systolic Ca_i^{2+} while LV pressure did not recover to baseline (stunned myocardium). In hearts perfused with W7, the onset of contracture was significantly delayed (686 vs 825 sec). The rise in ischemic Ca_i^{2+} was significantly attenuated (0.66 vs 0.48 μM), as was peak reperfusion Ca_i^{2+} (1.29 vs 0.88 μM). W7 significantly improved recovery of LV pressure (55 vs 75%), rate of contraction and relaxation and decreased resting Ca_i^{2+} (0.43 vs 0.28 μM) 20 min after reperfusion during stunning.

Conclusion: We showed that increases in Ca_i^{2+} during ischemia and reperfusion and consequent stunning in the mouse heart may be regulated by calmodulin. This model may provide a reliable tool to study the effects of specific gene alterations on Ca_i^{2+}-regulated mechanisms in the heart.

1109 Acute Myocardial Infarction

Tuesday, March 31, 1998, Noon–2:00 p.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 1:00 p.m.–2:00 p.m.

1109-125 The Effect of Preinfarction Angina on Reperfusion and Infarct Size in Patients With Acute Myocardial Infarction

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Background: Recent studies have suggested that absence of pre-infarction angina in patients with acute myocardial infarction (AMI) is associated with slower reperfusion and larger infarct size, and thus these patients should be considered for primary angioplasty.

Methods: We studied 110 patients presenting with AMI (< 6 hours). Presence of pre-infarction angina (unstable angina < 7 days) was determined. All patients were treated with recombinant tissue plasminogen activator (rt-PA). Angiography was performed where feasible at 60 minutes (95/110) and at 90 minutes (all patients). Flow in the infarct related artery was graded by the Thrombolysis in Myocardial Infarction (TIMI) system (grade 0–3). Reperfusion was defined as TIMI 2 or 3 flow. Infarct size was estimated by serial CK and CK-MB levels measured 6-hourly for 24 hours.

Results: Patients were divided into those with pre-infarction angina: 37 (34%) and those without pre-infarction angina: 73 (66%). There was no significant difference between the 2 groups in reperfusion at 60 or 90 mins, in rates of TIMI 3 flow at 60 or 90 mins or in mean peak CK or CK-MB levels.

	P. angina present (%)	P. angina absent (%)
Reperfusion at 60 mins	28/34 (82)	50/61 (82)
Reperfusion at 90 mins	32/37 (86)	61/73 (83)
TIMI 3 flow at 60 mins	20/34 (59)	41/61 (67)
TIMI 3 flow at 90 mins	27/37 (73)	52/73 (71)
Mean peak CK	2097 U/L	2472 U/L
Mean peak CKMB	165 U/L	222U/L

Conclusion: We did not find absence of pre-infarction angina to be associated with slower reperfusion or larger infarct size. Since most studies are either retrospective or have small patient numbers, a prospective large scale angiographic trial is required.

1109-126 Is Thrombolytic Therapy Indicated in all Patients Having Chest Pain and Left Bundle Branch Block?

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Thrombolytic therapy (TTx) reduces mortality in patients (pts) with MI and bundle branch block (BBB). However, most studies have not differentiated between pts with right BBB and left BBB (LBBB), which frequently obscures diagnostic ST changes. Current treatment guidelines recommend TTx for pts presenting with LBBB and possible MI. If the incidence of MI is not high, many pts may be treated inappropriately.

Methods: Emergency Department pts with LBBB evaluated for possible myocardial ischemia were risk-stratified using the initial history and physical into three levels: High risk: TTx or primary PTCA; Moderate risk: anti-ischemic therapy but no TTx; and Low risk: further risk-stratified with rest myocardial perfusion imaging.

Results: Of the 87 pts who had LBBB (2% of all chest pain visits), only 9 (10%) had MI (Table). Only one pt was identified as high risk by clinical criteria; he underwent emergent revascularization. The moderate and low risk pts with MI all had peak CKs > 900 U/L (median 337 U/L). Perfusion imaging was abnormal in 14 (42%) low risk pts, though only 1 had MI. The high risk pt was the only in-hospital death.

	N (%)	# MI (%)
High	1 (1)	1 (100)
Moderate	53 (61)	7 (13)
Low	33 (38)	1 (3)
Total	87 (100)	9 (10)

Conclusions: The incidence of MI in pts with chest pain and LBBB may be much lower than suspected. Using TTx without clinical risk stratification in all pts with LBBB may result in treatment of many pts not having MI.

1109-127 Use of Helicopter Transportation in Acute Myocardial Infarction in the United States

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Background: Very little data has been published comparing the differences in outcome between patients with acute myocardial infarction (AMI) who are transported to an acute care facility via helicopter versus those transported via traditional ground ambulance.

Methods: We examined patients with AMI who were enrolled in the National Registry of Myocardial Infarction 2 between 6/94 and 4/96.

Results: Of the 125,122 patients identified who presented with ST segment elevation or left bundle branch block on their initial ECG, 1,059 (0.8%) were transferred via helicopter. Patients transferred via helicopter were younger (62.9 vs 68.7), more often male (74% vs 58%), less likely to have a previous history of diabetes or congestive heart failure and less likely to present with congestive heart failure on exam. Patients transferred via helicopter were also more likely to receive either thrombolytic therapy (45% vs 31%) or primary angioplasty (15% vs 7%). Helicopter transport was not associated with a delay in median time from symptom onset to thrombolytic administration (2.6 vs 2.4 hours). While patients transferred via helicopter had a lower unadjusted mortality compared to patients transferred via ambulance (10.8% vs 14.4%, $p < 0.001$), mode of transport was not an independent predictor of in-hospital mortality after controlling for differences in baseline characteristics and treatments received (OR = 1.11, 95% C.I. 0.88–1.39).

Conclusions: Patients who are transported to an acute care facility via helicopter are younger, have less comorbid conditions, less severe infarctions and are more likely to receive some form of reperfusion therapy. These differences explain why patients transferred via helicopter are observed to have a lower mortality.

1109-128 The Significance of Paroxysmal Atrial Fibrillation Complicating Acute Myocardial Infarction in the Thrombolytic era

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Background: The significance of paroxysmal atrial fibrillation (PAF) after acute myocardial infarction (AMI) in the thrombolytic era (TE) is not well defined.

Aims: To define the incidence, short- and long- term prognostic significance of PAF in AMI patients (pts) in the TE.

Methods: A prospective, nationwide survey of the 2866 AMI pts in all CCU's in Israel during Jan-Feb 1992, '94 and '96 (TE), compared with a